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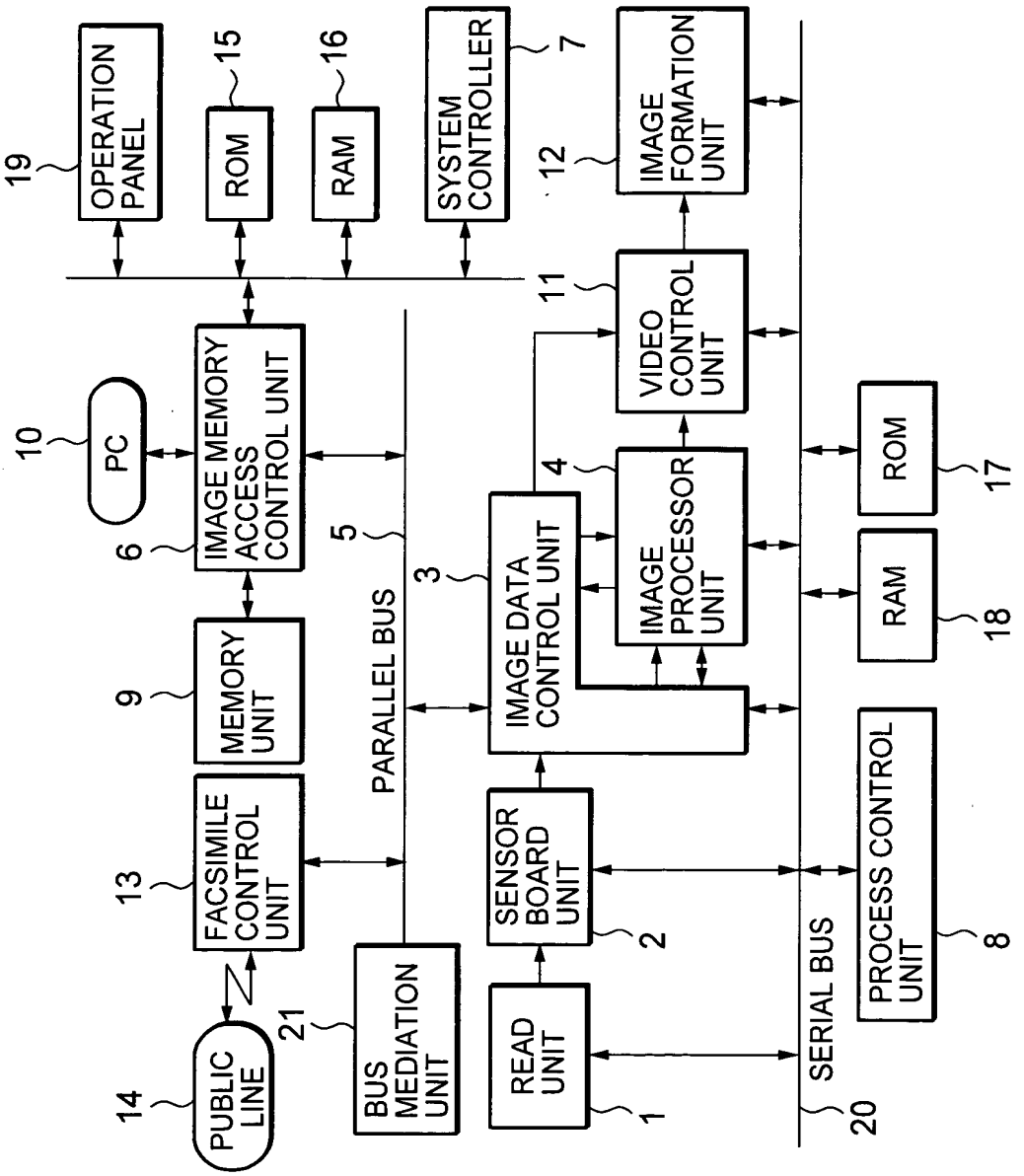

FIG. 1

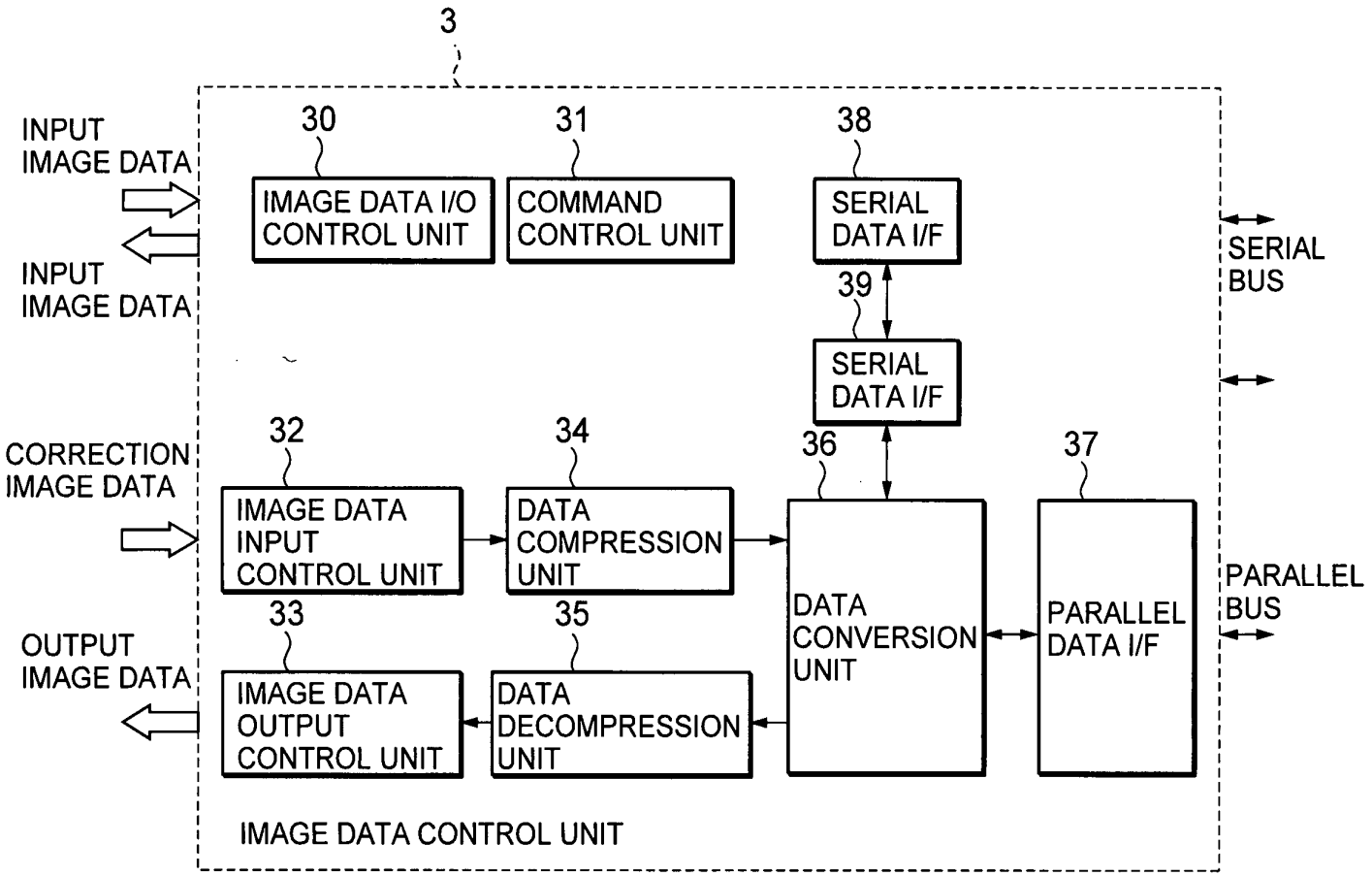
3
INPUT IMAGE DATA
INPUT IMAGE DATA
CORRECTION IMAGE DATA
OUTPUT IMAGE DATA
30
IMAGE DATA I/O CONTROL UNIT
31
COMMAND CONTROL UNIT
38
SERIAL DATA I/F
39
SERIAL DATA I/F
SERIAL BUS
32
IMAGE DATA INPUT CONTROL UNIT
34
DATA COMPRESSION UNIT
36
DATA CONVERSION UNIT
37
PARALLEL DATA I/F
PARALLEL BUS
33
IMAGE DATA OUTPUT CONTROL UNIT
35
DATA DECOMPRESSION UNIT
IMAGE DATA CONTROL UNIT

FIG. 2

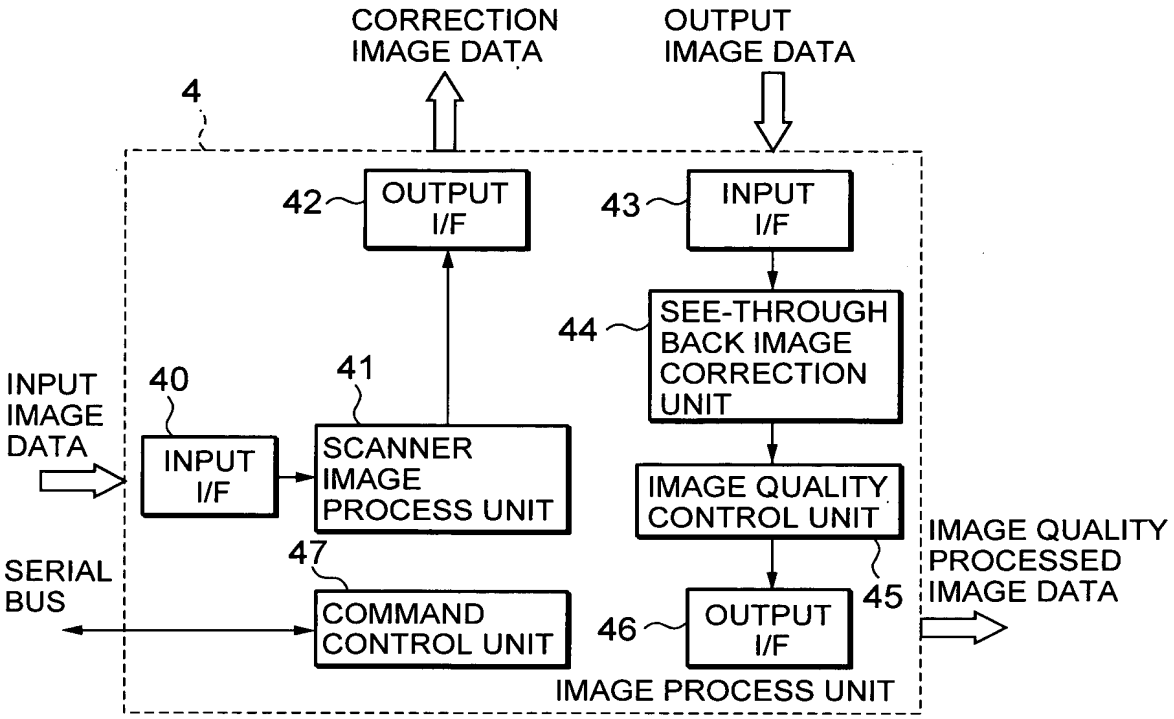
CORRECTION IMAGE DATA
OUTPUT IMAGE DATA
4
42
OUTPUT I/F
43
INPUT I/F
44
SEE-THROUGH BACK IMAGE CORRECTION UNIT
INPUT IMAGE DATA
40
41
INPUT I/F
SCANNER IMAGE PROCESS UNIT
IMAGE QUALITY CONTROL UNIT
IMAGE QUALITY PROCESSED IMAGE DATA
47
SERIAL BUS
COMMAND CONTROL UNIT
46
OUTPUT I/F
45
IMAGE PROCESS UNIT

FIG. 3

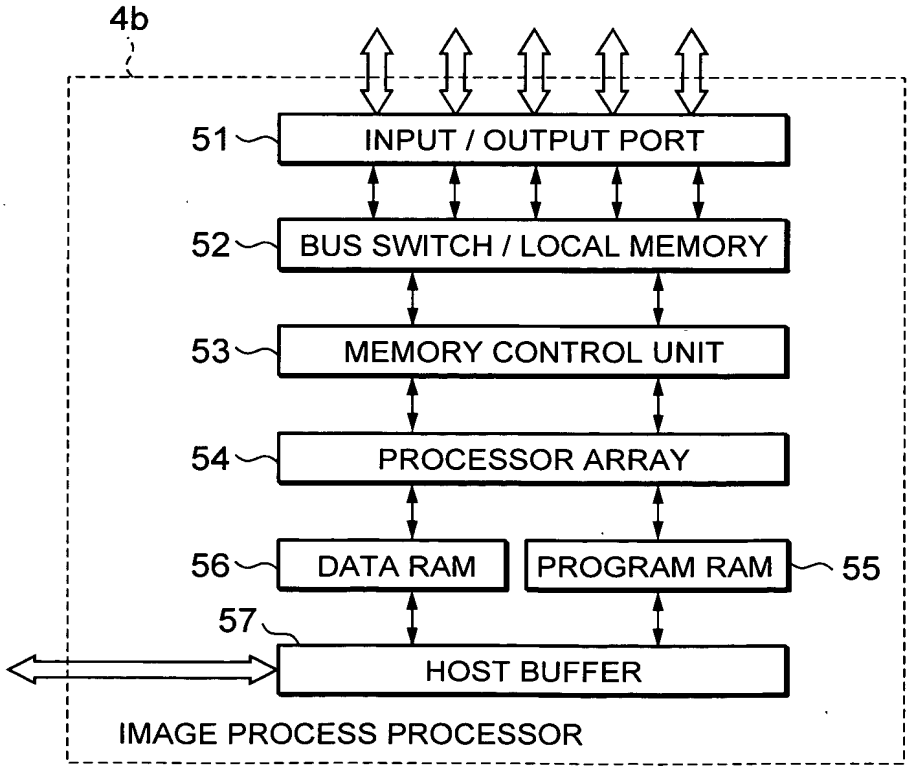
4b
51
INPUT / OUTPUT PORT
52
BUS SWITCH / LOCAL MEMORY
53
MEMORY CONTROL UNIT
54
PROCESSOR ARRAY
56
DATA RAM
PROGRAM RAM
55
57
HOST BUFFER
IMAGE PROCESS PROCESSOR

FIG. 4

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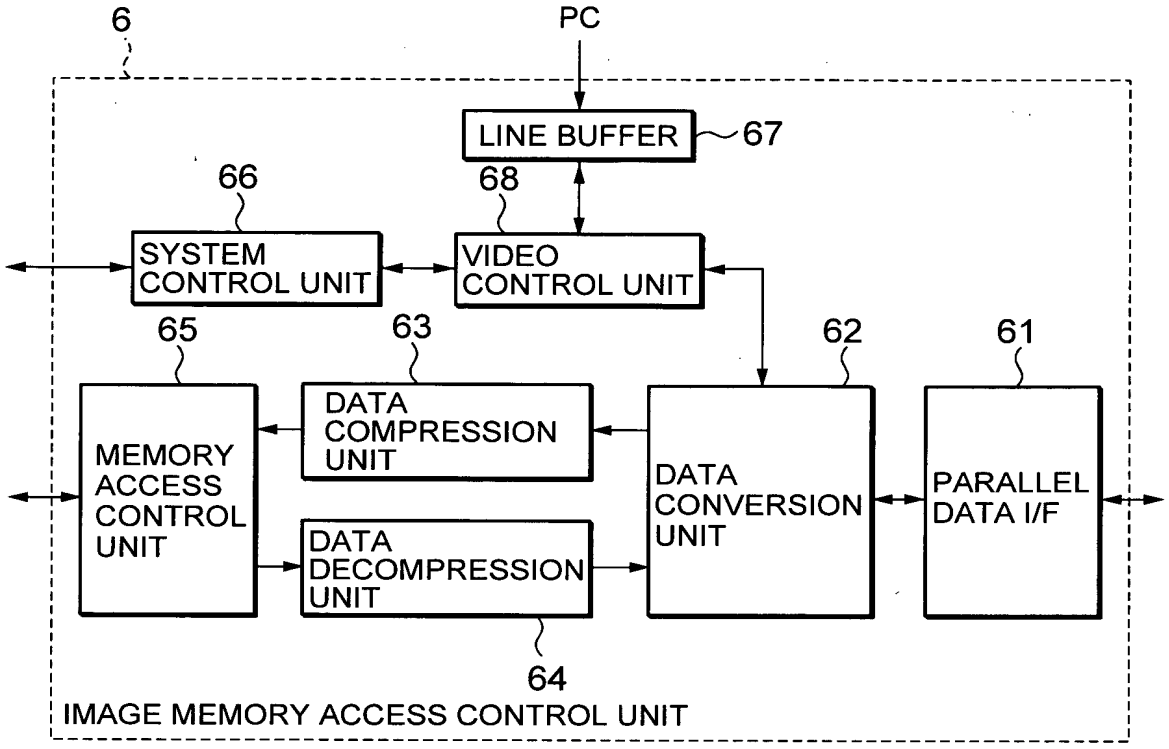

FIG. 5

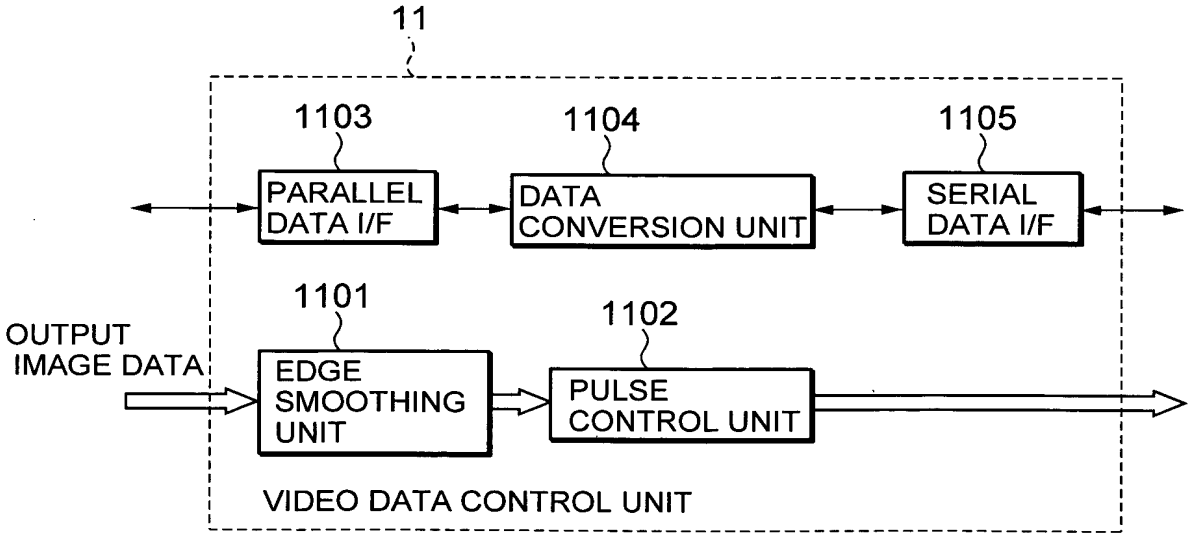

FIG. 6

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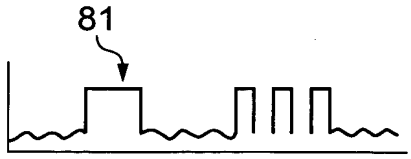

FIG. 7A

FRONT IMAGE

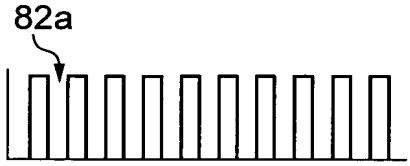

FIG. 7B1

BACK IMAGE
(DOT PATTERN)

FIG. 7B2

BACK IMAGE
(CHARACTER)

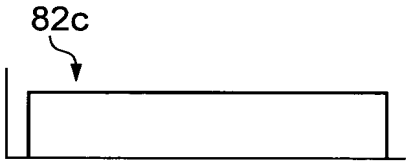

FIG. 7B3

BACK IMAGE
(THICK)

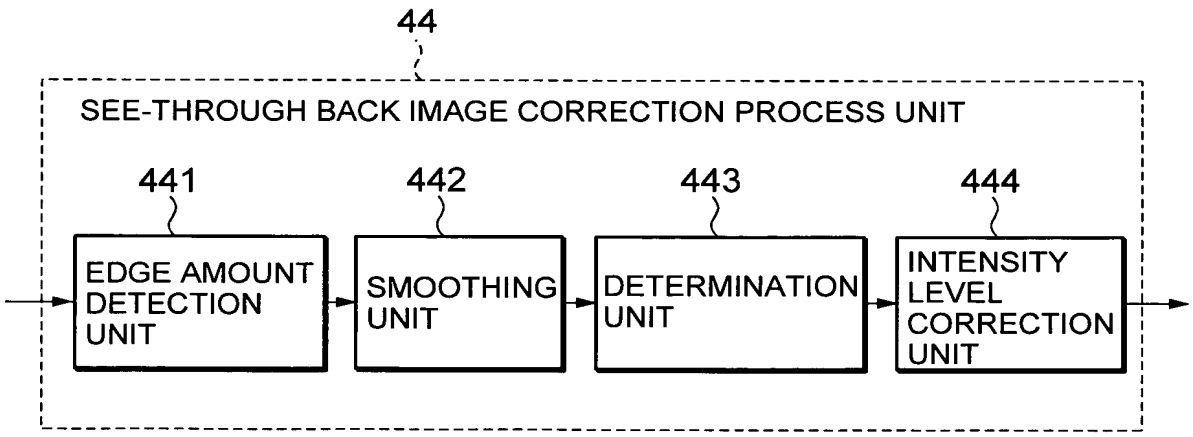

FIG. 8

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$$L1=\begin{bmatrix} & -1 & \\ -1 & +4 & -1 \\ & -1 & \end{bmatrix}$$

FIG. 9

FIG. 10A

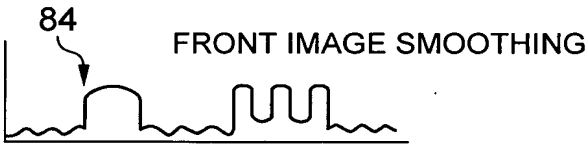

FIG. 10B

$$L2=\begin{bmatrix} 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 2 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \\ 1 & 1 & 1 & 1 & 1 \end{bmatrix} X1/26$$

FIG. 11

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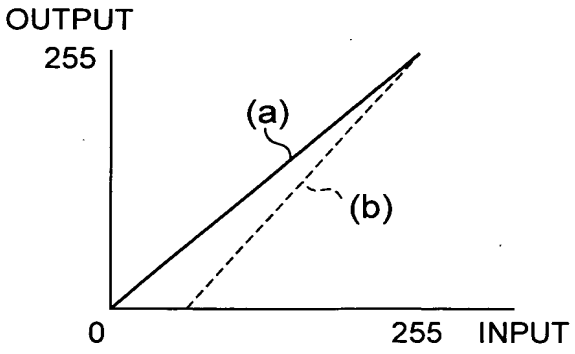
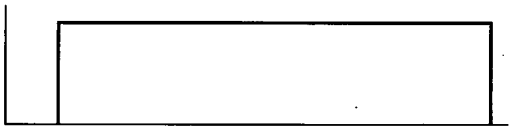


FIG. 12

FIG. 13A

FIG. 13B



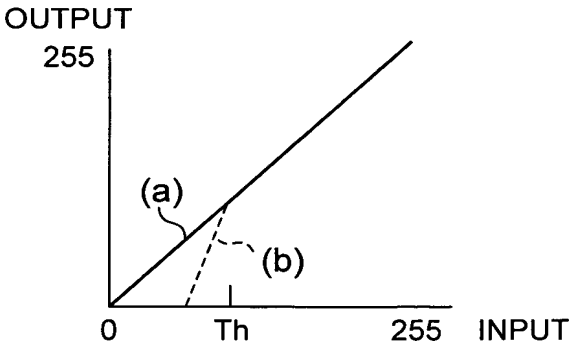


FIG. 14

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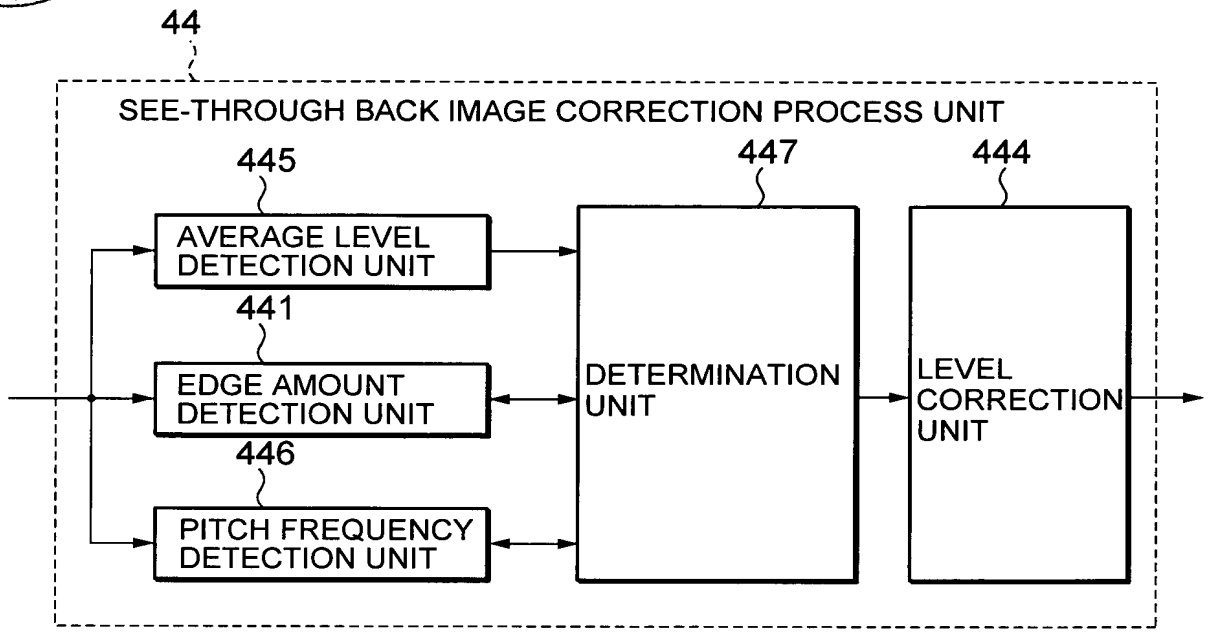

FIG. 15

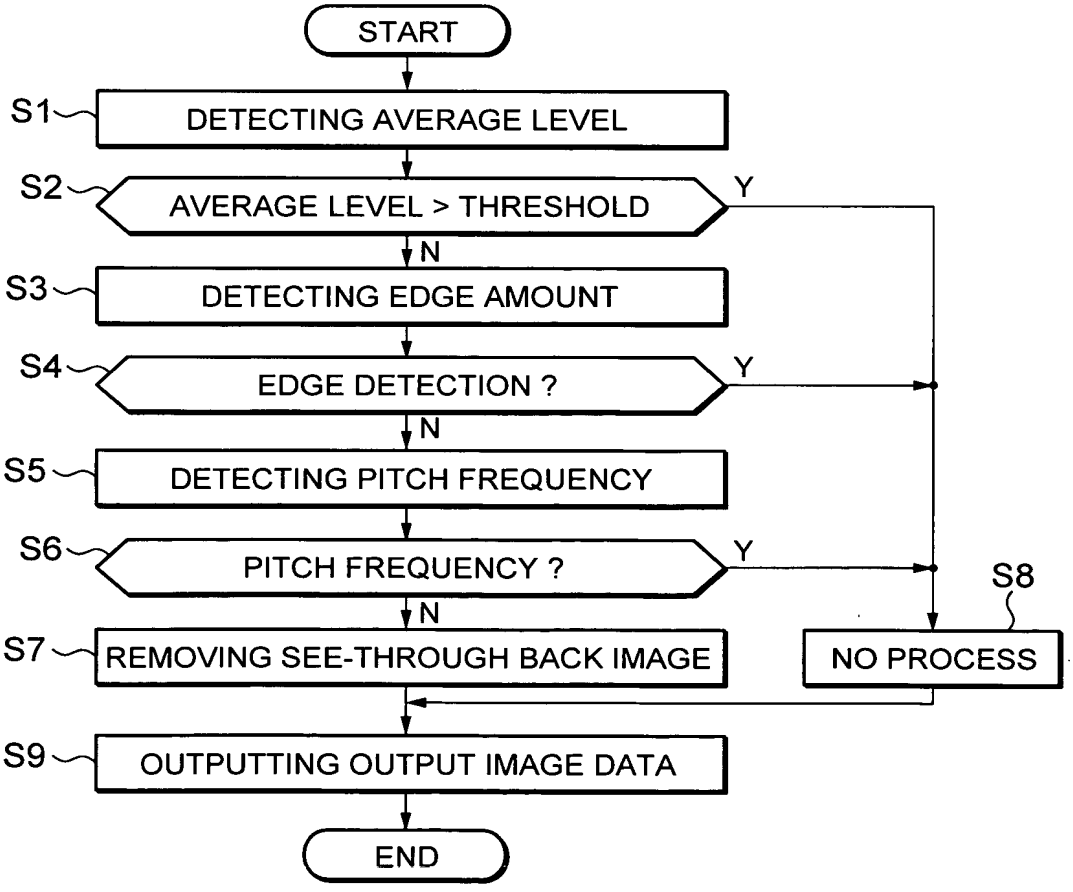

FIG. 16

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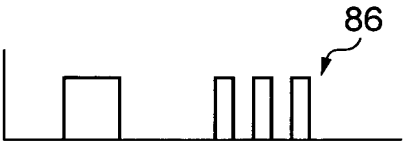
FIG. 17A

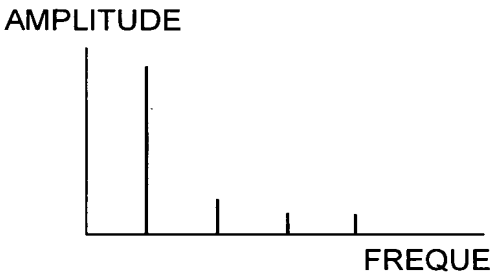
FRONT DOT PATTERN DETECTION

FIG. 17B



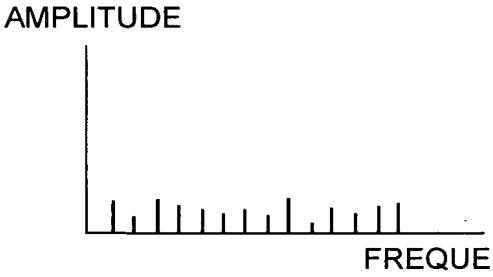
FRONT IMAGE AFTER REMOVING SEE-THROUGH BACK IMAGE

FIG. 18A



DOT PATTERN IMAGE

FIG. 18B



SEE-THROUGH BACK IMAGE

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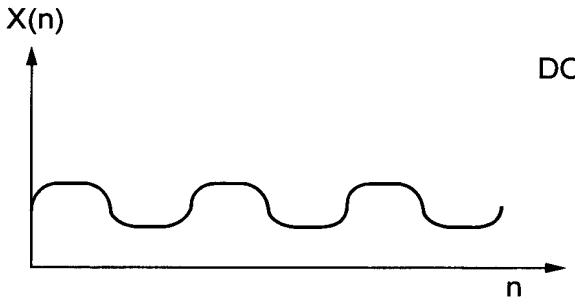

FIG. 19A

FIG. 19B

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M1

D(1,1)	D(1,2)	D(1,3)	D(1,4)	D(1,5)	D(1,6)	D(1,7)	D(1,8)	D(1,9)	· · ·	D(1,N)
D(2,1)	D(2,2)	D(2,3)	D(2,4)	D(2,5)	D(2,6)	D(2,7)	D(2,8)	D(2,9)	· · ·	D(2,N)
D(3,1)	D(3,2)	D(3,3)	D(3,4)	D(3,5)	D(3,6)	D(3,7)	D(3,8)	D(3,9)	· · ·	D(3,N)

M2

D(1,1)	D(1,2)	D(1,3)
D(2,1)	D(2,2)	D(2,3)
D(3,1)	D(3,2)	D(3,3)

M3

D(1,2)	D(1,3)	D(1,4)
D(2,2)	D(2,3)	D(2,4)
D(3,2)	D(3,3)	D(3,4)

M4

D(1,3)	D(1,4)	D(1,5)
D(2,3)	D(2,4)	D(2,5)
D(3,3)	D(3,4)	D(3,5)

M(N-1)

D(1,N-2)	D(1,N-1)	D(1,N)
D(2,N-2)	D(2,N-1)	D(2,N)
D(3,N-2)	D(3,N-1)	D(3,N)

FIG. 20